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JAN 05 2007

REMARKSI. Introduction

In response to the Office Action dated October 5, 2006, claims 1, 16 and 31 have been amended. Claims 1-3, 6-18, 21-33 and 36-45 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

II. Prior Art RejectionsA. The Office Action Rejections

In sections (1)-(2) of the Office Action, claims 1-14, 16-29 and 31-44 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,411,771 (Aotake) in view of U.S. Patent No. 6,005,643 (Morimoto). In section (3) of the Office Action, claims 15, 30 and 45 were rejected under 35 U.S.C. §103(a) as being unpatentable over Aotake and Morimoto and further in view of U.S. Patent No. 6,571,054 (Tonomura).

Applicant's attorney respectfully traverses these rejections.

B. The Applicant's Claimed Invention

Independent claims 1, 16 and 31 are generally directed to processing a video stream received by a computer. Claim 1 is representative and comprises the steps of:

receiving a video stream, wherein the video stream comprises multiple frames;
analyzing the video stream to identify scene changes between frames of the video stream; and
marking one or more user or private data fields of one or more scene-change frames of the video stream to indicate a scene change, in a manner transparent for encoded content within the frames, and in order to provide an index of access points for displaying specific scenes or segments, wherein the user or private data fields are stored separately from the encoded content within the frames.

C. The Aotake Reference

Aotake describes an MPEG1 real time encoder board that generates index data as an evaluation value representing the complexity of a picture. A scene change parameter representing the degree of a scene change occurring in the picture is then calculated from the index data. The scene change parameter is associated with a scene change pointer, that is, position information on a location of the picture in which a scene change occurs to a degree indicated by the scene change

parameter. The scene change parameter and the scene change pointer are recorded as an index in an index file. On the other hand, an MPEG system stream output by the MPEG1 real time encoder board is stored in an MPEG file separated from the index file.

D. The Morimoto Reference

Morimoto describes data hiding and extraction methods. It is also a method for embedding additional information into a video movie without substantially having an influence on the compression efficiency of the video movie and also without substantially causing degradation of the picture quality. Particularly, the method of the present invention involves specifying at least one embedding region in the frame of the video movie for embedding information, and determining a type of interframe prediction of the embedding region in correspondence with information to be embedded by referring to an embedding rule where a content of data to be embedded is caused to correspond to the type of interframe prediction of the embedding region. It is desirable that the frame in which the embedding region exists is a bidirectionally predictive-coded frame.

E. The Tonomura Reference

Tonomura describes an invention in the creation of an electronic image book provided with a book-type interface; a video is analyzed; images are extracted from the video under predetermined event type conditions; the extracted images are stored as index information in an index management table; images are selected from the index management table under desired conditions and laid out as a sequence of representative images in a page screen; item numbers of the laid out representative images, information about their positions on the page and information about a video file linked to the representative images are recorded in a page management table in correspondence with pages; and at the same time, representative image data corresponding to the item number is recorded in an image data table.

F. The Applicant's Claims Are Patentable Over The References

Applicant's invention, as recited in independent claims 1, 16 and 31, is patentable over the references, because the claims recite a specific combination of limitations not found in the references.

The Office Action, however, asserts that Aotake and Morimoto, when combined, teach all the elements of claims 1-14, 16-29 and 31-44. In addition, the Office Action asserts that Aotake, Morimoto and Tonomura, when combined, teach all the elements of claims 15, 30 and 45.

Applicant's attorney disagrees.

The references, taken individually or in combination, do not teach or suggest the limitations of Applicant's independent claims directed to "marking one or more user or private data fields of one or more scene-change frames of the video stream to indicate a scene change, in a manner transparent for encoded content within the frames, and in order to provide an index of access points for displaying specific scenes or segments, wherein the user or private data fields are stored separately from the encoded content within the frames."

The Office Action, on the other hand, asserts that Aotake and Morimoto, when combined, do teach all the limitations of Applicant's independent claims.

Specifically, the Office Action asserts that Aotake discloses the limitations of receiving a video stream, wherein the video stream comprises multiple frames (Aotake: Fig. 6a and col. 20), analyzing the video stream to identify scene changes between frames (Aotake: col. 20), and marking with respect to the field or frames of the video stream (Aotake: col. 4).

The Office Action notes that Aotake creates an index of access points to identify scene changes within a video stream (Aotake: Figs. 15, 21, etc.), but fails to disclose marking fields of frames of a video frame to indicate a scene change.

The Office Action also asserts that Morimoto teaches a method of hiding additional information into a user data field of a video frame (Morimoto: col. 1), as well as embedding additional data within a video frame without substantial degradation (Morimoto: col. 1, line 55 to col. 5).

Finally, the Office Action asserts that it would have been obvious to one skilled in the art at the time of the invention to modify Aotake as taught by Morimoto to perform all the limitations of Applicant's independent claims.

Applicant's attorney disagrees.

Applicant's attorney asserts that the combination of Aotake and Morimoto does not describe marking user or private data fields of scene-change frames to indicate a scene change, in a manner transparent for encoded content within the frames, and in order to provide an index of access points for displaying specific scenes or segments, wherein the user or private data fields are stored separately from the encoded content within the frame.

Instead, the combination of Aotake and Morimoto teaches a system of creating an index file that is separate from the content of an MPEG stream, wherein the index file includes indexes comprising a scene change parameter representing the degree of a scene change occurring in the content and a scene change pointer providing position information on a location of the content in which the scene change occurs (Aotake), and then hiding a signature, either within a user data field or within the content itself in manner that does not cause substantial degradation of picture quality, for the purposes of preventing illegal copies (Morimoto).

Specifically, Applicant's attorney notes the following:

- In Aotake, a scene change parameter and scene change pointer are recorded as an index in an index file separate from the MPEG file. As admitted in the Office Action, Aotake fails to mark fields of the frames to indicate a scene change.
- In Morimoto, additional information can be placed in a user data field of an MPEG video bit stream, but this additional information relates to the signature of the creator, for the purposes of preventing illegal copies, and does not indicate a scene change in order to provide an index of access points for displaying specific scenes or segments.
- Also in Morimoto, additional information may be embedded into a motion image compressed by employing interframe prediction, in a manner that ensures there will be almost no degradation in picture quality, and that makes it difficult to remove embedded information from a motion image. Again, this additional information relates to the signature of the creator, for the purposes of preventing illegal copies, but does not indicate a scene change in order to provide an index of access points for displaying specific scenes or segments.
- Indeed, Morimoto does not mark scene-change frames, and specifically avoids embedding information in scene-change frames, because of the degradation in picture quality that results.

Consequently, even when combined, Aotake and Morimoto do not teach or suggest marking one or more user or private data fields of one or more scene-change frames of the video stream to indicate a scene change, in a manner transparent for encoded content within the frames, and in order to provide an index of access points for displaying specific scenes or segments, wherein the user or private data fields are stored separately from the encoded content within the frames.

Tonomura does not overcome the deficiencies of the combination of Aotake and Morimoto. Recall that Tonomura was cited only against dependent claims 15, 30 and 45, and only for teaching the creation of an electronic book by analyzing a video sequence.

In summary, the various elements of Applicant's claimed invention together provide operational advantages over Aotake, Morimoto and Tonomura. In addition, Applicant's invention solves problems not recognized by Aotake, Morimoto and Tonomura.

Thus, Applicants' attorney submits that independent claims 1, 16, and 31 are allowable over Aotake, Morimoto and Tonomura. Further, dependent claims 2-15, 17-30, and 32-45 are submitted to be allowable over Aotake, Morimoto and Tonomura in the same manner, because they are dependent on independent claims 1, 16, and 31, respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 2-15, 17-30, and 32-45 recite additional novel elements not shown by Aotake, Morimoto and Tonomura.

III. Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicant's undersigned attorney.

Respectfully submitted,

GATES & COOPER LLP
Attorneys for Applicants

Howard Hughes Center
6701 Center Drive West, Suite 1050
Los Angeles, California 90045
(310) 641-8797

Date: January 5, 2007

GHG/

G&C 30571.270-US-01

By: George H. Gates
Name: George H. Gates
Reg. No.: 33,500